REMARKS

This Amendment is in response to the Office Action mailed July 30, 2002. In the Office Action, the Examiner rejected claims 1-20 under 35 U.S.C. § 103. Applicants have amended claims 1, 2, 3, 10, 16, and 19. No new claims have been added. Claims 1-20 remain pending in the application. Reconsideration in light of the amendments and remarks made herein is respectfully requested.

Drawings

The Draftperson indicated that the drawings were objected to because of the margins, quality of copies, and non-conforming lines, numbers, and letters.

Since the drawings are acceptable for examination purposes, Applicants will postpone submission of formal drawings until the application is allowed.

Nonstatutory Double Patenting Rejection

The pending claims 1-20 have been provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-20 of copending Application No. 09/271,008 and also over claims 1-22 of copending application No. 09/131,141.

It is stated in the Office Action that a timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. Applicants respectfully acknowledge this provisional obviousness-type double patenting rejection of the pending claims. However, Applicants respectfully decline to file a terminal disclaimer at this point in time because the present application and copending Application Nos. 09/131,141 and 09/271,008, have not

been allowed. Applicants would like to withhold the filing of any such terminal disclaimer until either the present application or one of the copending applications is allowed.

Rejections Under 35 U.S.C. §103

Claims 1-20 were rejected under 35 U.S.C. §103(a) as being unpatentable over Simmons et al. (U.S. Patent No. 6,192,028), hereinafter referred to as Simmons, in view of Frazier et al. (U.S. Patent No. 5, 784, 559, hereinafter referred to as Frazier.

To establish a prima facie case of obviousness, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination must be found in the prior art, not in applicant's disclosure. In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

Applicants respectfully submit that claims 1-20, as amended, are not obvious over Simmons in view of Frazier for the reasons and explanations set out below.

As to the amended independent claim 1, Applicants respectfully submit that Simmons and Frazier do not teach, disclose, or suggest the following limitation of:

> "assigning a plurality of pointer values to a corresponding plurality of records in a pointer value buffer associated with each of the virtual links, *the assignment of the plurality of pointer values based, at least in part, on the relative order in which data frames are transmitted on each of the virtual links*."
> [emphasis added]

Simmons discloses a network switch which has a shared memory architecture for storing data frames and a set of programmable thresholds to specify when flow control should be initiated on a selected network port (Simmons, Abstract). Specifically, Simmons states that the network switch includes a queue for storing free frame pointers, each specifying available memory locations in an external memory for storing data frames received from a network station (Simmons, Abstract). Furthermore, Simmons discloses that the network

switch takes a frame pointer from a free buffer queue for each received data frame and stores the received data frame in the location in external memory specified by the frame pointer while a decision making engine within the switch determine the appropriate destination ports. (Simmons, Abstract). In particular, Simmons discloses that data packets from a network station are received by the corresponding MAC port and stored in the corresponding receive FIFO. The received data packets are output from the corresponding receive FIFO to the external memory interface for storage in the external memory (Simmons, Col. 6, lines 5-20). Simmons also states that the header of the received packet is also forwarded to a decision making engine which comprises an internal rules checker and an external rules checker interface to determine which MAC ports will output the data packet (Simmons, Col. 6, lines 21-24). The internal rules checker and external rules checker provide the decision making logic for determining the destination MAC port for a given data packet (Simmons, Col. 6, lines 29-32). Simmons further states that the rules checker, based on information in the header, determines from where the frame packet will be cast, i.e., through which port or ports will the frame packet be transmitted (Col. 7, lines 47-56). A frame pointer is assigned to each data packet as the data packet is removed from the FIFO, the frame pointer identifying the location in external memory where said data packet is stored. (Col. 7, line 57 to Col. 8, line 20) The pointer serves no other purpose than identifying a storage location for the data packet.

However, Simmons does not disclose or suggest the above recited element of claim 1. Specifically, Simmons does not disclose or suggest *the assignment of the plurality of pointer values based, at least in part, on the relative order in which data frames are transmitted on each of the virtual links*. In fact, as described above, Simmons explicitly discloses that the data packets received from a network station are stored in a corresponding receive FIFO (First-In-First-Out) buffer in the order in which each packet/frame is completely received and then output from the corresponding receive FIFO buffer to the external memory interface for storage in the external memory. By definition, the FIFO (First-In-First-Out) buffer dictates

the order in which the data packets are output from the FIFO buffer to the external memory interface for storage in the external memory. Simmons does not teach or suggest that pointer values are assigned based, at least in part, on the relative transmission order of the data frames (e.g., frames which were transmitted first get higher-priority pointer values than frames which were transmitted later but were completely received or arrived first).

By contrast, the claimed invention assigns pointer values *based, at least in part, on the relative order in which data frames are transmitted.* Unlike the system in Simmons which orders its' packets according to the order in which packets are completed (FIFO) with no regard to pointer values, the claimed invention the claimed invention employs pointer values to order packets according to the "relative order in which data packets are transmitted." This permits using the pointer values to determine the order in which the corresponding packets or frames are promoted, independent of when packet reception is completed (e.g., frames which arrive first are promoted before frames which, even if completed first, arrived later). (Application, page 16, line 15 to page 17, line 9; page 19, line 5 to page 21, line 18)

Thus, it is clear that Simmons does not disclose or suggest any mechanism or method in which a pointer value associated with a frame or data packet stored in a receive buffer is used to determine an order in which the respective frame or data packet is promoted from the buffer to another device (e.g., output from the receive buffer to the external memory interface). In fact, because of the nature of the receive FIFO buffer described in Simmons, the data packets as described in Simmons have to be read out of the receive FIFO buffer in the first-in-first-out manner. This is clearly different and distinguishable from what is claimed in the above-recited element of claim 1 where data packets a read out according to their relative order of transmission.

Frazier discloses a flow control method in a full-duplex Ethernet network in a lossless fashion using CSMA/CD. According to Frazier, uniquely identifiable flow control transmit on/off messages are transmitted by a receiving station about to be congested to the

transmitting station whose data output is to be controlled (Frazier, Abstract). The transmitting station physical layer receives and decodes these messages. If XOFF is recognized, the transmitting station continuously asserts CRS to its MAC layer at the MII, regardless of the prior CRS current state CRS is continuously asserted until the receiving station transmits an XON flow control signal to indicate its ability to accept further data (Frazier, Abstract, Col. 5, line 43 – Col. 6, line 33).

However, Applicants are unable to find any disclosure or suggestion by Frazier that is directed to the above-recited element of the amended claim 1. Specifically, there is no disclosure by Frazier which teaches or suggests using a pointer value associated with a frame to determine the relative order in which data frames are transmitted.

Because Simmons and Frazier do not teach or suggest the above-recited limitation of the amended claim 1, Applicants respectfully submit that the amended claim 1 is not obvious over Simmons in view of Frazier. Independent claims 10, 16, and 19 each include a limitation similar to that distinguished in claim 1. Accordingly, Applicants respectfully request that the rejection of independent claims 1, 10, 16, and 19 be withdrawn. Since claims 2-9, 11-15, 17-18, and 20 depend from one of the amended claims 1, 10, 16, or 19 and include additional limitations, Applicants respectfully submit that claims 2-9, 11-15, 17-18, and 20 are also not obvious over Simmons in view of Frazier. Withdrawal of the rejections of claims 1-20 is therefore respectfully requested.

VERSION WITH MARKINGS TO SHOW CHANGES MADE

1. (Amended) A method for preserving frame order across an aggregated link comprised of a plurality of virtual links each supporting a particular transmission rate, the method comprising:

~~(a)~~ receiving up to a plurality of indications denoting commencement of frame transmission on each of the virtual links; and

~~(b)~~ assigning a plurality of pointer values to a corresponding plurality of records in a pointer value buffer associated with each of the virtual links, the assignment of the plurality of pointer values based, at least in part, on the relative order in which data frames are transmitted on each of the virtual links.

2. (Amended) The method of claim 1, further comprising:

~~(c)~~ receiving the data frames transmitted on each of the plurality of virtual links in a common receive buffer.

3. (Amended) The method of claim 2, further comprising:

~~(d)~~ reading the received frames from the common receive buffer based, at least in part, on the pointer value assigned in each of the pointer value buffers.

10. (Amended) An apparatus comprising:

a receive buffer having a plurality of records in which to store received frames of data;

a plurality of pointer value buffers each associated with one of a plurality of virtual links of an aggregated link, each of the virtual links supporting a distinct transmission speed; and

a network interface, coupled to the receive buffer and the pointer value buffers, to assign a plurality of pointer values in appropriate buffers~~ones of~~, from among the plurality of pointer

value buffers, in response to the commencement of transmission of frames on the associated virtual link, the assignment of pointer values based, at least in part, on the relative order in which the frames are transmitted.

16. (Amended) In a data network, a method for preserving frame order of a plurality of frames transmitted across a plurality of virtual links of a multi-link trunk, wherein each of the virtual links is associated with a discrete transmission rate, the method comprising:

~~(a)~~ receiving up to a plurality of indications denoting commencement of frame transmission on each of the virtual links of the multi-link trunk; and

~~(b)~~ assigning a plurality of pointer values to a plurality of records in appropriate buffers, the plurality of records corresponding to a number of indications received from each of the virtual links ~~in appropriate ones~~, the appropriate buffers chosen from among ~~of~~ a plurality of pointer value buffers associated with the plurality of virtual links, the assignment of the plurality of pointer values based, at least in part, on a relative order in which the indications of commencement of frame transmissions are received.

19. (Amended) A storage medium comprising a plurality of executable instructions which, when executed by a processor, cause the processor to implement a plurality of functions including a function to preserve frame order of frames transmitted over a plurality of virtual links each associated with a discrete transmission rate, the function implementing pointer value buffers associated with each of the virtual links and, upon receiving an indication of frame transmission from the virtual link, stores pointer values in appropriate ~~ones of~~ buffers from among the pointer value buffers, the pointer values denoting the relative order of commencement of frame transmission on the virtual link.

Conclusion

In view of the amendments and remarks made above, it is respectfully submitted that the pending claims are in condition for allowance, and such action is respectfully solicited. Authorization is hereby given to charge our Deposit Account No. 02-2666 for any charges that may be due. Furthermore, if an extension is required, then Applicants hereby request such an extension.

Respectfully submitted,

BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP

Dated: November 26, 2002

Julio Loza
Reg. No. 47,758

12400 Wilshire Boulevard, Seventh Floor
Los Angeles, California 90025
(714) 557-3800